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ABSTRACT

The two papers in this document were presented at a pre-session held before the IFLA general conference in 1986. In "Problems of Document Delivery in the Science and Technology Information Environment--An African View," Lucilda Hunter (Sierra Leone) discusses typical difficulties encountered in the process of information retrieval in sub-Saharan Africa and other Third World regions, including inadequate periodical collections, lack of photocopying facilities, difficulties of communication both within and between countries, unreliable postal services, lack of interlibrary lending machinery, and unreliable electricity, all due to severe financial constraints. A combination of regional cooperative arrangements and increased resource sharing with libraries from developed countries is proposed as a solution to these inadequacies. In "The Importance of Secondary Bibliographic Services in the Information Transfer Chain--Utilization of Bibliographic Databases," Makiko Miwa (Japan) examines the emergence, distribution process, number, and kinds of bibliographic databases, and discusses the status and skills of database searchers. It is concluded that information professionals should exert skills in creating information products and bibliographic databases as commodities in order to facilitate bibliographic information utilization, improve the quality of databases, promote the information transfer chain, and enhance the recognition of the library profession. (KM)

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1986

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Problems of document delivery in the science and technology information environment - an African view

by

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I consider it a great honour and privilege to have been invited to present an African view of the problems of document delivery in the science and technology environment. For those of you who like myself, are from developing countries what I have to say will probably sound very familiar, but instead of yawns of boredom, I hope my presentation will elicit a more lively response and help engender a greater determination to seek solutions to overcoming problems encountered with varying degrees of severity by librarians in almost half of the world.

As you know, Africa is an enormous continent containing over forty countries. I shall be talking about what I believe obtains in those countries having the most in common - those countries to be found more or less south of the Sahara and north of the Republic of South Africa. A small number of them are fairly prosperous - Kenya, Zimbabwe, Malawi spring immediately to mind. Many are potentially prosperous but at present, the majority of them, twenty-nine to be exact, are listed among the world's poorest nations.

Speaking at a conference which took place in London late in 1984 to mark publication of UNICEF's report on the state of the world's children, the Executive Director, as quoted in the Lancet,[1] described the prevailing state of affairs thus:

> "Africa is the continent with the lowest incomes, the lowest economic growth rates and the lowest levels of life expectancy and literacy. It also has the least political stability and the most severe environmental problems ... The percentage of Africans living in absolute poverty has risen from 82% in 1974 to 91% in

1982. Inevitably, it has the highest rate of child motality".

That situation has not improved to any appreciable degree since the report was published and indeed, it has worsened in many countries. Against such a bleak socio-economic background scientific and technical activity is still aimed mainly at creating the basic requirement for national development - an energetic population. The health, food and agricultural sciences are therefore the areas of greater endeavour.

That information support is needed for the activities of everyone involved in the development effort, has long been recognized by librarians in the region. This awareness was expressed at the IFLA Pre-Session Seminar in Nairobi in 1984, when the participants, most of whom were from sub-Saharan Africa, approved what has been called the Nairobi Manifesto - 1984. Among several clauses, there is this one:

"That relevant information ... is a vital and indispensable resource in the national development process".

Librarians practising their profession in scientific and technological fields in particular, realise that they ought to be playing a dynamic role in the struggle for development by becoming the purveyors of this 'relevant' information through their library services. Unfortunately, all librarians in Africa operate in an environment which is not on the whole information conscious. Libraries are felt to be for people needing to pass examinations. So while there is a need for library services there is no clamouring for them. For this reason, professional librarians, tend to become demoralized by low

status and the personal hardship caused by poor salaries in generally inflationary economies. They lack the drive to sell themselves and since any professional organization is only as strong as the individuals making up its membership, Library Associations, if they exist, lack the power to exert much influence over decision makers. It is hardly surprising then that no proper policies have been formulated for the provision of library and information services for various sectors in these countries. Without such policies, there is no framework within which their hard-pressed governments feel obliged to provide more financial support to vitalize existing library services. The ability of all librarians in Africa to be successful purveyors of information is therefore severely limited by a dire shortage of funds, and this disadvantage is particularly serious among special libraries attached to government institutions of ministries. In the main these are the libraries operating in the sphere of science and technology apart from university establishments. Quite a few of them date from colonial days and their function is now barely understood. As I see it then, unless all libraries and special libraries in particular can offer an information service which comes to be appreciated, their development will remain very low among the priorities of African governments. In special libraries the succes of any programme with this aim in view will ultimately depend on the ability of the librarian to satisfy the needs of existing and potential clients in the terms of finding information they ask for or would want to have and supplying it as speedily as possible in its published form. In the scientific and technological environment, the sources of such information will mainly be serial publications, government or institutional documents and conference proceedings.

First of all, I want to spend a little time talking about some of the

difficulties encountered in the whole process of information retrieval which is so closely related to document delivery.

On account of some of the very problems I shall describe below, my paper had to be prepared against a deadline which gave me no time to track down much information on libraries operating in the scientific and technological spheres in fields other than the health sciences - my own area of experience. I however believe it can safely be stated that in sub-Saharan Africa as in other Third World regions, obstacles to successful information retrieval are generally the same.

Many bio-medical libraries manage to subscribe to Index Medicus, for accessing manually the MEDLARS (Medical Literature Analysis and Retrieval System) data base in the United States or, in the case of francophone countries the Bulletin Signaletique. More prosperous libraries might also purchase sections of Excerpta Medica, Biological Abstracts and the Tropical Diseases Bulletin - all abstracting journals in the field. However, as is the case with all serial publications financial constraints which make it difficult to pay for these publications and unreliable postal services have resulted in incomplete sets, thus limiting their usefulness. In my own library, for example, the whole of the author section of the Cumulated Index Medicus for 1978 failed to arrive, and the library has not been in a position to pay subscriptions since 1983. Fortunately, in the health science field, the World Health Organization, in the context of its declared objective of Health for All by the year 2000 is making strenuous efforts to improve the information support available to health scientists and workers in developing countries. It has therefore arranged for assistance in this regard to be provided overseas since no library in the region possesses the facilities

for on-line access to international data bases. Even if telecommunications systems were sufficiently developed, which they are not, the cost of the long distance telephone calls involved would probably be prohibitive in the present economic climate. The WHO Library therefore arranges indirect access free of charge to on-line searching of the MEDLARS data base by African health science libraries, via the Swiss Academy of Medicine.

However, the availability of this service while welcome, is only a partial solution to the problem of locating published information. First of all the process is extremely slow. Receiving a computer print out takes all of five weeks in my own experience. If it then has to be sent to a client located at some distance from the library, the supply time, just for references, is even longer. Secondly, there can be no interaction between the inquirer and the data base or at least with the person who will be carrying out the search . Even when the client's requirements have been stated to the best of his or the librarian's ability, the results of the search can therefore be disappointing. There is yet another problem associated with using international data bases. That of irrelevance.

On the whole, the existing international data bases bibliographically control the scientific literature produced by the industrialized world, and not a great deal of what is produced by developing countries. In 1983 only 16 periodical titles from Africa, were among the 2709 indexed for Index Medicus, only 30 from the South-East Asia region; only 30 from developing countries in the Western Pacific region. Consequently, a considerable amount of relevant information must remain inaccessible to health personnel in the developing world.[3] The South-East Asia region has begun to control its out put of literature in the health sciences, but so

far little has yet been achieved towards this end within the African region, although the idea of producing an African Index Medicus has received support from the WHO Regional Office for Africa.[4] Meanwhile, the situation with regards access to the information which might be most relevant to our clients remains very unsatisfactory. Needless to say, fugitive literature, such as theses and government and institutional documents, is even harder to trace. For assistance in this area the librarian has to depend on personal contacts, references in books, journals and other documents.

Inspite of what has been said above, let us suppose that our client is quite happy with the results of the literature search. What happens next? He is eager to have in his hands the full texts of the citations listed and it is at this point that the inadequacy of the library in terms of document delivery usually becomes apparent.

In the worst situation, only one or two of the journals cited are available because the library cannot afford a large collection. One of the particular issues needed will be missing because it went astray and was perhaps never claimed, or replacement copies too were never received. The client, a busy research worker, needs photocopies of those articles which are available but the librarians has never had the funds to purchase a photocopier. The librarian offers to have the articles photocopied by a commercial service and the client agress to return for them in a couple of hours. The library's messenger is sent post-haste to carry out this errand only to find that the electricity has failed in that part of town. Now, the librarian has used the British Document Supply Centre's pre=paid photocopy service coupons in the past, or perhaps the similar one operated by the Centre Nationale de Recherche Scientifique in Paris, if he is from a francophone country. It is

an excellent service and reasonably quick with a supply time of about three to four weeks. He has however just run out of coupons and there are no funds for purchasing any more until the next financial year. The librarian also knows that with American Library Association Interlibrary loans forms, he can request photocopies free of charge from the United States National Library of Medicine (in accordance with an NLM/WHO agreement); but he no longer has a supply of these coupons either. In any case they have to be purchased with U.S. Dollars. Even if there were funds available in local currency, restrictions would prevent him from obtaining the foreign exchange for months, especially since Gaylord Brothers the Vendors, now demand a minimum order of $100.

The librarian is almost certain that some of the journals are available in the country where there is more than one medical school and research library, but no current union list of serials exists and the issues needed are all less than five years old. All telephones are out of order and enquiries by mail would take too long. The librarian gives a helpless shrug and apologies to the client who goes away, frustrated. The literature search with which he was so pleased has proved to be a waste of time and money. If the client is disappointed in this way too often, he will give up using the library. His isolation from the scientific community might kill his interest in his work or prevent him from making any progress with his research. If he is ambitious he might even decide to seek employment overseas.

In a better situation, the library will be able to supply photocopies of some of the required articles from its own shelves without difficulty, for even though its photocopying machine is not operational due to a break down, the commercial service is functioning. A few more photocopies can be ordered

from abroad, though not so many as required because his supply of photocopy coupons is very limited. When the photocopies arrive, two, ordered from citations without abstracts prove quite irrelevant after all, however the client assured of being able to read maybe a third of the citations listed, departs fairly satisfied with the library service.

In the best situation to be found in sub-Saharan Africa today, say at the University of Zimbabwe with its collection of 1090 current journals, the library will be able to supply many more photocopies out of its own collection and using its own facilities, and can supplement that supply by requesting photocopies from overseas. It is however unlikely that there is any library in the region with a client satisfaction rate regularly approaching the 70% which seems to be the accepted measure of efficient document delievery.[5]

My purpose in describing these imaginary situations has been to highlight the major factors adversely affecting document delivery in African countries. They are, not in any way special order - inadequate periodical collections, lack of photocopying facilities, difficulties of communication both within and between countries, unreliable postal services, no proper machinery for interlibrary lending such as current locational devices, unreliable electricity supply, etc. Underlying all these factors are the financial constraints imposed by the economic situation in our countries. Financial constraints are what prevent improvements in the material resources of libraries as worsening exchange rates lessen the purchasing power of available funds even when budgetary allocations are not reduced, and foreign exchange restrictions make importation extremely difficult when almost all required literature has to be obtained from overseas. Financial constraints are also what prevent the improvements in infrastructure which would

facilitate exploitation of available resources for document delivery by interlibrary cooperation. There are several examples of how committed librarians have tried to overcome the obstacles created by inadequate infrastructure; but their efforts are usually thwarted by other manifestations of the lack of funds. In Nigeria, for instance, in order to avoid using the slow and unreliable postal service, a van carrier service was established for informal interlibrary lending between medical libraries of four universities. This service has now ceased altogether owing to the participating libraries in ability to continue meeting running costs.[6] In my own country, such a service would collapse for lack of fuel.

The region as a whole is not as poor in document resources in the health sciences as might be expected in the circumstances. Mention has already been made of the holdings of the University of Zimbabwe. The Medical Library at the University of Nairobi has a collection of 496 current periodicals. That of the University of Zambia, 283. The Central Medical Library in Addis Ababa, Ethiopia holds 323 current titles.[7] Regional cooperative arrangements would therefore seem to be a partial solution to overcoming inadequacies at national level, and indeed there has been much interest aroused and expressed in regional interlibrary cooperation over the last decade or so.

In the health science field the question was first raised at a meeting of African health librarians which took place in the course of the 4th International Congress of Medical Librarians in Belgrade in 1980 and an informal consortium of African Medical Libraries was established, with the following objectives:

a. to improve communication among medical librarians in Africa.

b. to improve interlibrary cooperation and resource sharing.

A resolution was passed to "persuade national and regional authorities to convert the consortium into a formal network to be officially ratified by the national governments of the member libraries."[8]

And the health science librarians were evidently not the first group of librarians in the science and technology field to consider resource sharing. In 1975 a meeting of West African agricultural librarians and documentalists was held at the International Institute of Tropical Agriculture at Ibadan, Nigeria to launch the West African Centre for AGLINET (the worldwide network of agricultural libraries and documentation centres). Certain institutions were appointed country centres to coordinate activities within participating countries and to liaise with the regional centre at IITA. Each country was to compile a national union list of agricultural periodicals to cumulate in a West African union list to be held at the regional centre. Writing about this nine years later, Boadi complians: "Nothing much has happened ... cooperative ventures may forever remain resolutions".[9]

Indeed, because the same factors which impede document delivery at national level make intraregional cooperation to achieve this hardly a viable project at present. Since library services are not better provided for, even the manpower with training to undertake such ventures is lacking and as suggested earlier, the low status and financial problems affecting librarians both personally and in the practice of their profession militate against the emergence in their ranks of the kind of ineluctable dynamism needed to make basically indifferent decision-makers start taking the necessary steps towards implementing such schemes.

Thus, in the health science field as in the agricultural field, little progress has been made since the 1980 meeting in Belgrade. In 1982, the WHO Regional office for Africa with the cooperation of librarians in the region, published a union list of biomedical serials located in seven of the best stocked medical libraries in East and West Africa. That same year, a workshop for senior health librarians from East and Southern Africa was held in Arusha during which procedures for establishing interlibrary lending were formulated. These included a call for the designation of national focal points to coordinate the activities involved. The WHO Regional office for Africa subsequently advised ministries of health in its member states to start implementing the programme; but to date no more than a third of the governments concerned have designated national focal points. Of those so appointed to the best of my knowledge not one has so far been allocated funds to enable it to perform the function of organizing resource-sharing even at national level.

African governments recognise that there is a danger of their countries becoming increasingly isolated from the rest of the world as a result of their continuing stagnation, and they recently convened a special meeting of the United Nations General Assembly to endorse a five-year plan to halt and reverse the decline of their economies and speed up the development process. The urgent need to improve information transfer to various sectors of the community must be even more apparent to librarians in the region, yet the prospects for more successful document delivery remain bleak. To summarise, information published in Africa is difficult to trace owing to poor bibliographic control and even if it were, currency difficulties might make acquisition a problem. Most of the published information available to the scientific community is to be found in serials produced in North America and Western Europe, but rising costs on the one hand and financial constraints on the other are making it

increasingly difficult for individual libraries to ensure an uninterrupted supply of these publications or photocopies from them. Gifts of duplicates from libraries in the developed world are becoming rarer as transportation costs escalate and African libraries find it harder and harder to reimburse donors for shipment. Exchanging publications is another useful means of collection building, but not many African countries are in a position to produce scientific journals of sufficient quality and regularity to attract requests for exchange. National and Intra-regional resource-sharing is being promoted as a solution to inadequacies of document supply, but the far-reaching effects of the economic stagnation and decline being experienced in almost every African country make the successful implementation of cooperative schemes doubtful at present.

What then is the answer? I believe that until the region becomes more self-sufficient, it lies in a more determined effort by the community of librarians in the industrialized world to assist the efforts of their colleagues in Africa. Some of the existing problems could be ameliorated by a greater sharing of resources between libraries from developed countries and ours. Supplying some photocopies, for instance, or donating duplicates, already mentioned, or even donating new periodicals. American Library Association Interlibrary loan forms could be donated or the British Document Supply Centre's coupons. For the donors only small amounts of money need be involved yet such gifts regularly received could make all the difference to the quality of a library service in Africa. Attempts could also be made to persuade more publishers of serials to grant concessions to poor countries - the reduction in profits would probably be negligible. More scholarships could be offered for training in special librarianship and more fellowships be made available to enable trained librarians to improve their skills and

motivation. It is true that librarians in the indùstralized world also have their own problems with decision-makers but their professional organizations are in a much better position to influence attitudes. If worldwide publicity raised millions of dollars for famine-striken countries in Africa, surely publicising the inadequacies of information services for scientists there could persuade more scientific institutions and organisations in industrialized countries to share some of their, from our standpoint, vast resources. In the health science field, following initiatives by Library and Health Literature Service of the World Health Organization, this kind of resource sharing is already coming from various sources. In the context of IFLA's declared goal of Universal Availability of Publications commited librarians should individually and through their professional associations seek ways of ensuring that more and more assistance is forthcoming to improve document delivery in Africa and other very deprived areas of the Third World. Is this a completely unrealistic expectation?

As African nations succeed in rehabilitating their economies so, one expects, will the deficiencies in infrastructure be corrected. This will probably include an extension of the Pan-African Telecommunications Network (PANAFTEL) begun in 1962. International automatic telephone exchanges will be more widely in use as will telex machines. Computers will be common and linkages between countries not unusual.

It is to be hoped that meanwhile, with assistance, African librarians will become more competent and better motivated to help themselves, better trained to exploit available resources, their libraries better equipped for service, and the groundwork for interlibrary cooperation will have been properly prepared. Librarians will then be capable of seizing the opportuni-

ties offered by adequate infrastructures to establish networks which function well at both national and regional levels.

A realistic scenario for 1996 might well be the following:

> An epidemiologist in a remote district in Senegal needs information on certain topic. He is able to contact the nearest public library by radio telephone. Within five minutes the librarian is making a trunk call to the National Focal Point library in the inquirer's field. The reference librarian there decides that a computer search of various data bases will be necessary. A telex to the regional headquarters requests the search which is completed within three days and despatched to the National Focal Point. It arrives within ten days and reaches the client three days later. By return post he requests twenty photocopies. The National Focal Point Librarian consults his computerised union list, supplies ten photocopies from his own stock and by telex request six others to be sent to the epidemiologist by another library in the local network. At the end of another four or five days the researcher has been supplied with sixteen out of the twenty photocopies required. The last four are requested from the Regional headquarters. They are unavailable anywhere in the region so that institution makes an on-line request to the British Document Supply Centre. Copies of articles required are electronically transmitted in record time, printed and despatched to the requesting library. In another ten days the client has received them. The entire transaction has taken about five weeks. Still slow, by the standards industrialized countries will have reached, but compared with the state of affairs today, an amazing achievement.

REFERENCES

1. Africa - the permanent crisis. Lancet, January 5, 1985. P. 58
2. The Nairobi Manifesto - 1984. IFLA Journal 11 (2), 1985. pp. 137 - 138.
3. Regional Index Medicus Projects. WHO Chronicle 37 (6) 1983 pp. 197 - 202.
4. Ibidi.
5. Ember, G. Delivery of literature to and maintenance of collections in medical school libraries in less-developed countries. In: Saracevic, T. ed. Selective Libraries for medical schools in less-developed countries. A Bellagio Conference ... 1979. New York: Rockefeller Foundation, 1980. pp. 116 - 130.
6. Kannike-Martins, P.A. Responsibility of medical librarians to their library users. In: Medical Libraries - one world resources, cooperation, services. 5th International Congress on Medical Librarianship Proceedings 1. Tokyo: Japan Organization Committee, 1985. pp. 334 - 341.
7. Gozo, A.J. Appropriate health sciences library services for the Third World. Ibid. pp 239 - 243.
8. Consortium of African Medical Libraries Newsletter 1 (1) 1982 p. 2.
9. Boadi, B.Y. The information sector in economic development in Africa. The potential role for libraries. IFLA Journal 10 (2) 1984 pp. 139 - 144.

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The Importance of Secondary Bibliographic Services in the Information Transter Chain : Utilization of Bibliographic Databases

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Introduction

The problem caused by the growing volume of scientific and technical literature calls for the development and utilization of secondary bibliographic services such as abstracts and indexes. Abstracts have been used as substitutes for full documents, and indexes used as access points for locating these documents. These secondary bibliographic services are used by scholars and scientists as well as busy executives to gain an indispensable position in the information transfer chain.

The process of the information transfer chain in the field of science and technology is synthesized by Krishna Subramanian in Figure 1, where the abstracting and indexing services perform the function of "surrogarion"[1].

Emergence of Bibliographic Databases

With the steady increase of the scientific and technical literature ever since World War II, mojor abstracting and indexing services in North America and Europe started utilizing computerized photocomposition to facilitate the production of their hard copy publications in the 1960's. The magnetic tape version of the bibliographic databases emerged as a bi-product.

The popularization of these bibliographic databases has been achieved through the several stages shown below[2].

Stage 1 : Magnitic tapes of bibliographic databases are created solely for production used in preparing the hard-copy publications.

Stage 2 : The bi-product magnetic tapes of bibliographic databases are made available with batch retrieval software.

Stage 3 : The development of online interactive information retrieval software with the availability of larger disc storage, time-sharing function as well as remote access facility.

Stage 4 : Apparence of commercial online vendors such as DIALOG, SDC, or BRS, facilitated by the availability of low-cost value-added telecommunication networks, increased the utilization of bibliographic databases.

Stage 5 : Spreading of low-cost personal computers and telecomputing networks, with the availability of sophisticated communication software with gate-way functions enebled end-users to access these databases directly.

Presently, anyone in any part of the world has access to these commercial online bibliographic databases by obtaining the 8 or 16 bit personal computer with communication software and a modem if only telephone is available.

Distribution Process of Online Bibliographic Databases

Several kinds of organizations shown in Figure 2 are performing distinct roles in the online bibliographic database distribution process.

1) Database Procuders : Organizations that publish abstracts and indexes and develop bibliographic databases often as bi-products of printed publications. These include academic societies, government agencies, as well as commercial publishers.

2) Database Vendors : Organizations that provide computers whose uses can be shared simultaneously among many users, and supporting services that enable online searching to be performed. They assemble databases from many producers, make them available to users. These are usually private companies, sometimes government agencies and university centers.

3) Network Operators : Organizations that provide low-cost value-added telecommunication networks, enable online transmission to be reliable and cost-effective. These are often private companies of public corporations.

4) Information Brokers : Organizations that provide information gathering or fact finding for a fee. These including private service companies, consultant firms, as well as libraries who provide fee-base information services.

5) Telecomputing Networks : Organizations that provide personal computer networking services such as electronic mail, tele-conferencing, electronic bulletin board as well as gateway to large database vendors.

6) End Users : Those who actually use the output from the online databases for themselves. The word "end" emphasizes the distinction from searchers or intermediaries who conduct online search in place of end-users.

Number and Kind of Available Databases

According to the "Directory of Online Databases" published by Cuadra Associates, Inc., the number of publicly available databases are increasing rapidly as shown in Figure 3[3)].

In Japan, only 1285 databases are availble in 1985 based on the "Database Register" published by the Ministry of International Trade and Industry. Among them, approximately 50 % are secondary/bibliographic databases where nearly 80 % are produced outside Japan most of which are in the USA.

Subject coverage of registered databases are shown in Figure 5. It is obvious that databases are concentrated in the two fields of science & technology, and business & economics. Bibliographic databases are predominent in science & technology, whereas, numerical databases are predominent in business & economics. Consequently, bibliographic databases are abundant in the field of science & technology but not in the fields of social science or humanities.

Moreover, as previously mentiond, most of the databases are produced in the USA and Europe; roman alphabet writing countries. This is because of the early development of information technology in these countries as well as of the economics of information processing which is beyond the scope of this paper. As a result of the complexity of this language processing, bibliographic databases development in the Japanese language cost twice as much per record as its English version.

From above discussion, it is clear that bibliographic databases are readily available in the field of science & technology in English.

Cultivation of Searchers

The first online retireval systems were designed to allow end-users htemselves to interact directly with host computers vis terminals, changing their retrieval tactics as they go alog in order to obtain optimum results. However, as online database utilization became more sidespread, various organizations took to employing in-house searchers to retrieve information on behalf of the end-users.

According to results obtained from a survay conducted in the United States in 1975 on usage of online database services, only 5 % of all regrieval operations at that time were being carried out by end-users acting on their own; the remaining 95 % of database retreival operations were being performed by searchers[4]. In Japan as well, the results of a similar servey done in 1980 revealed that a miniscale 2.5 % of all database retrieval operation studied were conducted by the end user themselves[5], indicating the vital role played by searchers and information specialists in the retrieval of information from bibliographic databases.

The results of a survay conducted in 1984 by the Database Promotion Center (DPC), a non-profit government-sponsored organization devoted to the promotion of database utilization in Japan, indicated that there were insufficient number of in-house searchers in Japan, and that this was proving a major abstacle to database utilization in this country.

Futhermore, prctically all Japanese searchers learned their skills by participating in retrieval-oriented seminars sponsored by database service organizations following graduation from undergraduate or graduate schools where they majored in subjects totally unrelated to database services[6]. In numerous cases, these searchers suffer from the dearh of basic education in information sciences. They lack public recognition as specialists, these are factors that tend to keep them in the shadows at the workplace.

One of the reasons why basic education in information-related subjects is still insufficient in Japan is because there aren't enough courses on databases utilization being taught in the library science courses in Japanese institutions of higher learning. This can be attributed to the fact that library science education in Japan is strongly oriented toward the training of librarians to work at public libraries, and is relegated for the most part to two-year junior colleges instead of four-year regular colleges and universities. Therefore, organizations that hire searchers right out of school are not getting the highly-trained, highly-skilled specialists they require.

Roughly 72 % of all the Japanese organizations targeted by a 1985 survey conducted by the DPC responded that in-house training programs for searchers consisted principally of sending them to attend seminars held by outside database service vendors. Another 23 % of the respondants stated that they did not have in-house searcher training programs. And 1.7 % responded that they regularly conducted in-house courses for their searchers[7]. The seminars sponsored by database service vendors concentrate primarily on retrieval system operation procedures and the contents and indexing methods used in specific databases. They do not, however, provide training in those areas most needed by searchers, i.e. basic information science courses and consulting and counseling training.

In attempt to remedy this situation, while at the same time raising the status of searchers and increasing the spread of database utilizationskills, the Japan Documentation Society (JDS) implemented its first Database Searcher's Examination in November, 1985. Although subsequent exams will feature both Grade 1 and Grade 2 level tests, the first time around only Grade 2 searchers were tested. Of the 238 people who sat for the exam, 140 passed, resulting in 62.8 % pass ratio[8].

Conclusion

Large amounts of bibliographic information in the field of science and technology is available from online bibliographic databases. These databases are accessible all over the world with tiny personal computer terminals and telephone lines. Use of these bibliographic databases facilitate the location of necessary information at any time when needed. Also, the original documents heve become more accessible through electronic-mail order available through the same terminals. Statistics have already shown that the utilization of online bibliographic databases increased the overall requests for original documents. The availability of readily prepared information would eventually promote the research & development activity by saving time and effort for obtaining basic information.

We, as librarians who have the skill to utilize bibliographic information play an importand role in the information transfer chain, since the profeciency of the intermediary is required to make efficient use of sufficient databases.

For this purpose, library schools should teach more about information retrieval and database usage to their students. Also, librarians and library administrators should introduce online reference services in their libraries and promote users. Moreover, superior searchers can start running information brokerage services as enterpreners. Consequently, we as information professionals, should exert skills in creating information products and bibliographic databases as commodities. In this way the bibliographic information utilization will be facilitated, the quality of these databases will be imprôved, the information transfer chain will be promoted, and our professions as librarian or information literates will be recognized by society in this information oriented era.

References

1) Subramanyam, Krishna, "Scientific and technical information resources". (New York : Mercel Dekker, 1981), p.5.

2) Martha E. Williams, 1977 Database and online statistics, "Bulletin of the American Society for Information Science",3(4):14-16 (April 1977), with some supplements by the author of the paper.

3) "Directory of Online Databases",7(1):v (1986).

4) Wanger, J., Fuadra, C. A. and Fishburn, M. "Impact of Online Retrieval Services : A Survey of Users 1974-1975" (Santa Monica : System Development Corporation, 1976).

5) Hosono, K., and Miwa, M., Online Database Utilization in Japan, "Documentation Kenkyu",32(10):473-484 (1982).

6) Ishii, H., "Education and Training for Online System Users : Types of Cources Needed", Library and Information Science, No. 20 (1982), p.97.

7) "Survey of User Awareness of Database Services" (Tokyo : Database Promotion Center, 1985),p.16.

8) Society News : First Database Searcher's Examination (Grade 2) Held in November, 1985, "Docunmentation Kenkyu",36(1):60 (1086).

Figure 1 : Information Transfer Chain in Science and Technology

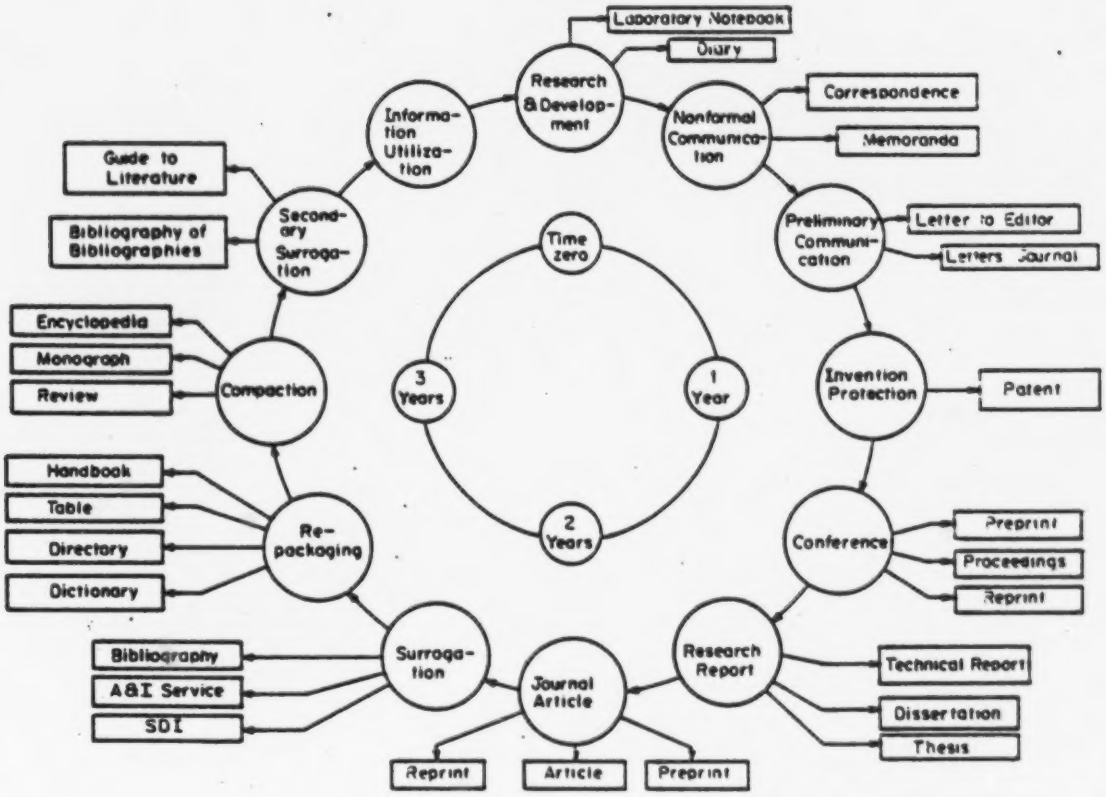


Figure 2 : Distribution Process of Online Databases

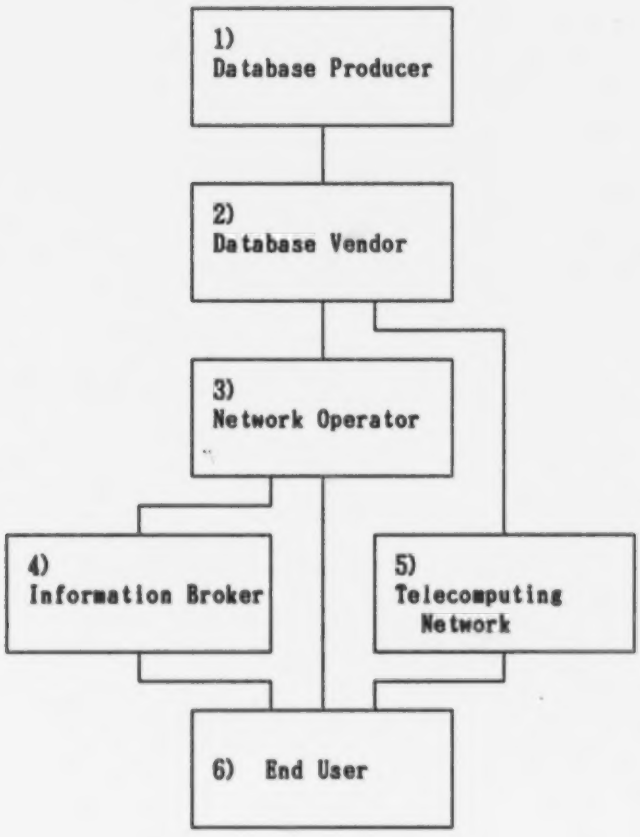


Figure 3 : No. of Publicly Available Online Databases in the World

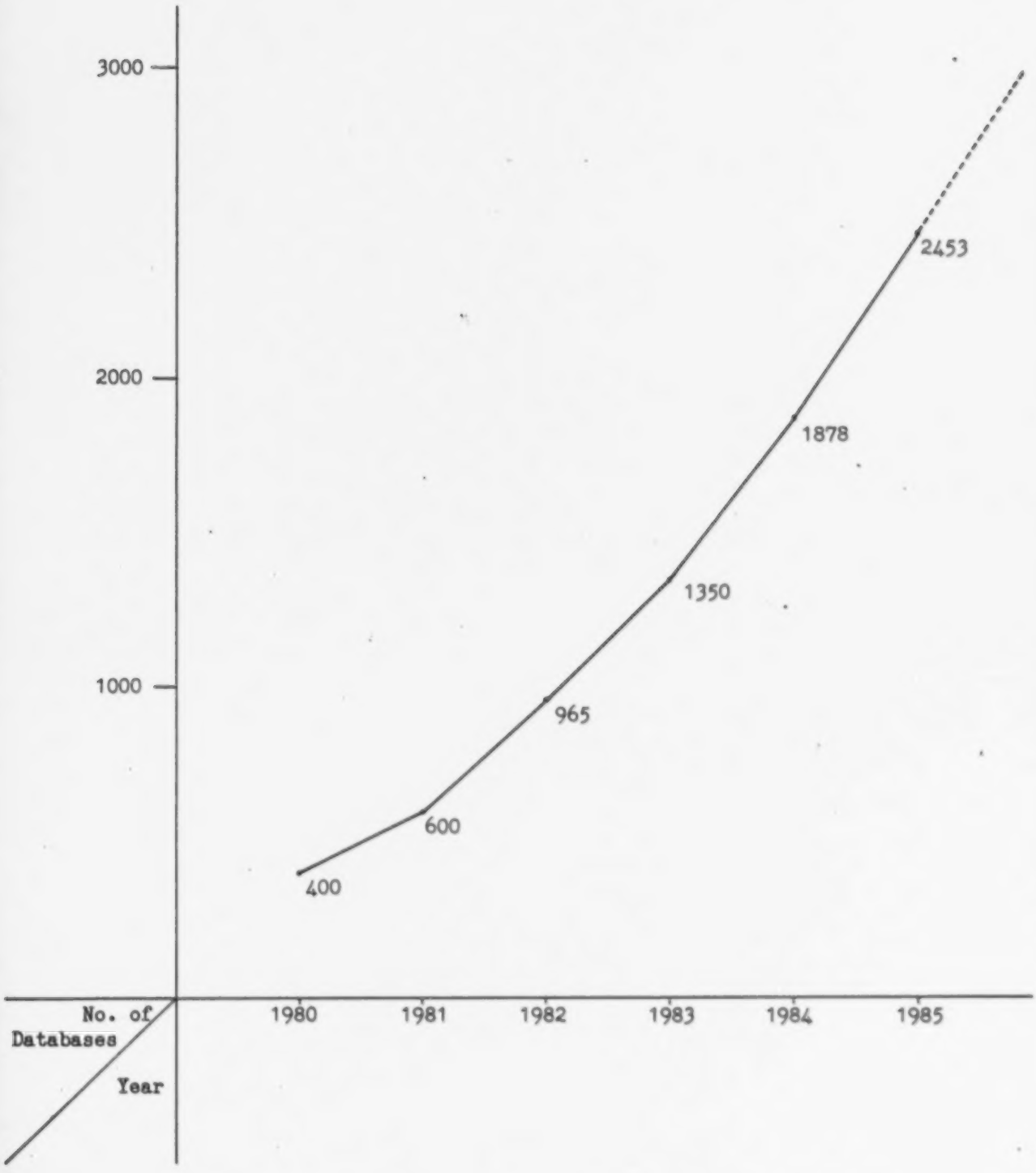


Figure 4 : No. of Available Databases in Japan

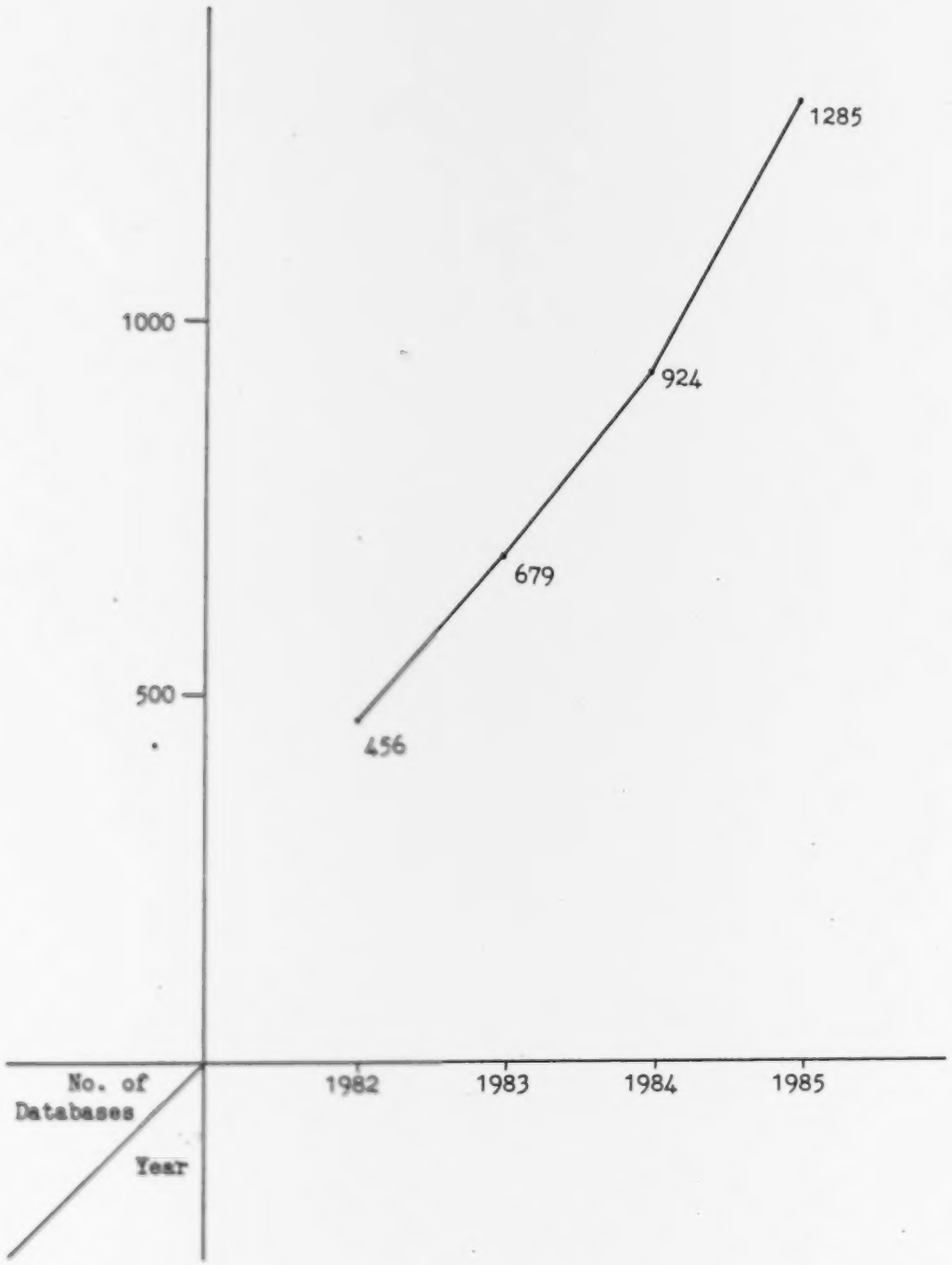
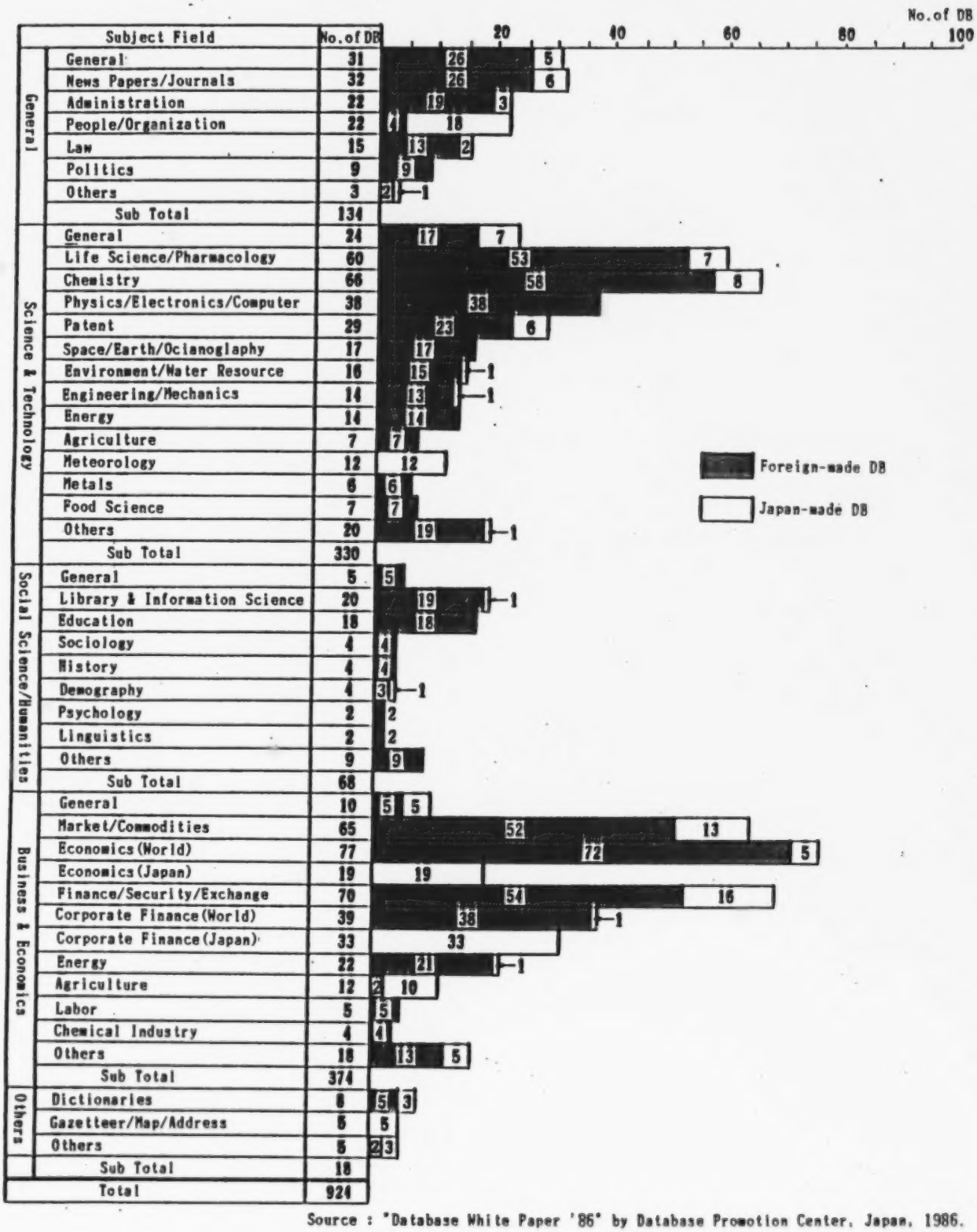


Figure 5 : Number of Available Databases in Japan by Subject (1984)



	Subject Field	No.of DB	Foreign-made DB	Japan-made DB
General	General	31	26	5
	News Papers/Journals	32	26	6
	Administration	22	19	3
	People/Organization	22	4	18
	Law	15	13	2
	Politics	9	9	
	Others	3	2	1
	Sub Total	134		
Science & Technology	General	24	17	7
	Life Science/Pharmacology	60	53	7
	Chemistry	66	58	8
	Physics/Electronics/Computer	38	38	
	Patent	29	23	6
	Space/Earth/Ocianoglaphy	17	17	
	Environment/Water Resource	16	15	1
	Engineering/Mechanics	14	13	1
	Energy	14	14	
	Agriculture	7	7	
	Meteorology	12	12	
	Metals	6	6	
	Food Science	7	7	
	Others	20	19	1
	Sub Total	330		
Social Science/Humanities	General	5	5	
	Library & Information Science	20	19	1
	Education	18	18	
	Sociology	4	4	
	History	4	4	
	Demography	4	3	1
	Psychology	2	2	
	Linguistics	2	2	
	Others	9	9	
	Sub Total	68		
Business & Economics	General	10	5	5
	Market/Commodities	65	52	13
	Economics(World)	77	72	5
	Economics(Japan)	19	19	
	Finance/Security/Exchange	70	54	16
	Corporate Finance(World)	39	38	1
	Corporate Finance(Japan)	33	33	
	Energy	22	21	1
	Agriculture	12	2	10
	Labor	5	5	
	Chemical Industry	4	4	
	Others	18	13	5
	Sub Total	374		
Others	Dictionaries	8	5	3
	Gazetteer/Map/Address	5	5	
	Others	5	2	3
	Sub Total	18		
Total		924		

Source : "Database White Paper '86" by Database Promotion Center, Japan, 1986.

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